Space Weather Forecast

Issued on Wednesday, 10 July 2024 at 13:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Increasing Chance of Moderate class flares (R1-R2; Minor-Moderate radio blackouts) throughout. Chance of Minor Storm intervals days 3 and 4 (12-13 Jul).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Moderate with three Moderate class flares observed in recent hours. There are eight numbered and two unnumbered regions on the disc. A region in the southeast is by far the largest and most complex region on the disc, showing a continued growth trend. A region in the far east is showing a slight growth trend in penumbral extent but appears relatively simple. There are two simple and unnumbered regions with the rest of the numbered regions on the disk also appearing small and magnetically simple. No significant Earth-directed Coronal Mass Ejections have been observed during the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds were at Slow levels for much of the period but are now slightly elevated at around 41ly. The resulting geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: Solar radiation was measured at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be at Low to Moderate levels, with a slight chance of becoming High from any isolated strong flares, which are most likely to originate from the large, centre-disc sunspot region.

Solar Wind / Geomagnetic Activity: No significant Earth-directed coronal mass ejections feature in the forecast. The solar wind at mostly slightly elevated perhaps briefly Elevated speeds for the next couple of days due to negative polarity coronal hole high speeds streams. During Day 3 or on day 4 (12-13 Jul) a further, likely faster and perhaps more impactful coronal hole high speed stream is expected to arrive bringing Elevated solar wind speeds. Geomagnetic activity is expected to be mainly Quiet to Unsettled through the period. The Chance of Active to G1/Minor storm intervals increases by days 3 and 4 (12-13 Jul) due to successive coronal hole fast wind enhancements.

Energetic Particles / Solar Radiation: Solar radiation storms are not expected, but there is a very slight chance of reaching S1/Minor Radiation Storm levels. This risk increases a little later in the period as a sunspot, currently in the southeast, rotates towards the southwest and into a more geoeffective position.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	50	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	70
Very Active	R3 to R5 X	No	15	15	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	15	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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